fusion phenomena. The two key ideas mentioned in the preceding paragraph stem from this particular mathematical basis.

It will be understood that method **10** may be implemented on a general purpose computer programmed to perform the operations of blocks **12–22**. Alternately, method **10** may be performed using dedicated conventional hardware to perform such conventional operations as the transforms of blocks **14**, **20**. Additionally it will be understood by those skilled in the art that dedicated hardware may be provided, using conventional synthesis and fabrication techniques, for performing other operations within method **10**.

It will be appreciated by those skilled in the art that changes could be made to the embodiments described above without departing from the broad inventive concept thereof. It is understood, therefore, that this invention is not limited to the particular embodiments disclosed, but it is intended to cover modifications within the spirit and scope of the present invention as defined by the appended claims.

I claim:

1. An image restoration method including image sensor wherein image degradation creates a degraded image g(x,y) of the form Pf=g, wherein p is an integral operator applied upon an ideal image f(x,y), $w(x,y,0)=P^0f$ represents the ideal image at time t=0 prior to the operation of p upon f, and w(x,y,1)=Pf=g(x,y) represents the degraded image at time t=1, the restoration method comprising the steps of:

(a) providing an image system described by said operator p;

(b) transmitting said ideal image f(x,y) through an image blurring and degrading transmission medium of said imaging system to provide said degraded image g(x,y);

(c) receiving said degraded image g(x,y) from said transmission medium by said image sensor;

(d) digitizing said received degraded image by said digitizer for comparison with said ideal image f(x,y);

(e) requiring the magnitude of the difference between the ideal image f and a blurred version of f to be less than a preassigned tolerance value by performing the following steps:

(f) constraining said magnitude of said difference by minimizing $\|f-P^sf\|$ wherein P^sf represents the image at time t=s and s is a substantially small value;

(g) imposing the constraint $\|f-P^sf\|\leqq K\epsilon$, where K is a constant and ϵ is representative of at least one image restoration parameter;

(h) imposing the constraint $\|Pf-g\|\leqq\epsilon$, wherein ϵ is representative of at least one image restoration parameter;

(i) imposing the constraint $\|f\|\leqq M$, wherein $M>>\epsilon$;

(j) determining a restored image f(x,y) which minimizes the quantity

$$\{\|Pf-g\|^2+\|(\epsilon/M)f\|^2+\|(1/K)(f-P^2f)\|^2\}$$

in accordance with said selected image;

(k) adjusting said image in accordance with steps (f)–(j) to provide a plurality of adjusted images; and

(l) selecting an adjusted image of said plurality of adjusted images.

2. The image restoration method of claim **1**, comprising the further step of time modifying said image f(x,y), to provide a time modified representation $w(x,y,t)=P^tf$.

3. The image restoration method of claim **1**, wherein a plurality of images $w(x,y,t)=P^tf$ is determined for a corresponding plurality of values of the time t.

4. The image restoration method of claim **3**, wherein the values of said restoration parameters are adjusted in accordance with said plurality of images for successively smaller values of time.

5. The image restoration method of claim **1**, wherein said restored image f(x,y) is determined through algebraic operations performed in the Fourier transform domain.

6. The image restoration method of claim **1**, wherein $\hat{f}(\xi,\eta)$, the Fourier transform of f(x,y) is determined by

$$\hat{f}(\xi,\eta)=\{|\hat{p}(\xi,\eta)|^2+K^{-2}|1-\hat{p}^s(\xi,\eta)|^2+\omega^2\}^{-1}\hat{p}(\xi,\eta)\hat{g}(\xi,\eta),$$

wherein $\hat{p}(\xi,\eta)$ is an optical transfer function of said system, $\hat{g}(\xi,\eta)$ is the Fourier transform of the degraded image g(x,y), ϵ is representative of at least one constant, K is a constant, $M>>\epsilon$, and s is a substantially small value of time.

7. The image restoration method of claim **6**, comprising the steps of performing a plurality of restorations using variations of K.

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